

# Mosa.

## Porcelain tiles, unglazed

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### Product description

Unglazed, dry-pressed, single-fired, fully vitrified porcelain tiles, manufactured with the Ultragres procedure, in accordance with EN 14411, annex G, type Bla, with a water absorption of < 0.1% on the surface and ≤ 0.3% on the body. Dimensionally stable tiles in sizes ranging from 10 x 10 to 60 x 120 centimetres, with various surface designs and structures, depending on the series and version. Cradle to Cradle Certified® Gold; designed for the technosphere and safe for the biosphere.

### Product advantages

Natural appearance; each tile is a unique product. Extensive range of sizes, including planks. Smooth and textured versions with appropriate slip resistance properties for each application. Suitable for use with underfloor heating. Durable porcelain tile for indoors and outdoors. For domestic, utility, and commercial use. Also suitable for wall and façade cladding. Very hard-wearing. High resistance to chemicals. Easy maintenance. Frost resistant. Dimensionally consistent. Modular. An extensive range of accessories, including skirtings, stair, and recess shower tiles, that fit with the modular range of wall and floor tiles.

### Stair-treads and skirtings

Stair-treads (TVG) and skirtings (BP) have an edge finish that has been applied after production. This finishing consists of a ceramic glaze in a similar colour to the surface that has been fired at high temperature to form an integral entity with the tile. Light coloured glazes may not always be able to fully cover the darker body colour.

### Benefits of the Ultragres procedure

With the Ultragres procedure the surface and body of the tile have optimal properties: the surface is highly wear resistant and easy to clean, while the body ensures high strength, very good dimensional stability, and good adhesion in cement mortar and tile adhesive.

### Sustainability and Cradle to Cradle

Mosa Ultragres unglazed porcelain tiles are Cradle to Cradle Certified® Gold. The composition of Mosa tiles is pure, clean, and suitable for inclusion in the cradle-to-cradle cycle. This means that they do not release any hazardous substances during or after their long service life. Mosa tiles are produced in our own factories in Maastricht (NL). We utilise renewable energy sources and local materials whenever possible, resulting in a favourable CO2 balance. Specific data about Mosa tiles are included in the National Environmental Database for calculation of the material-related environmental performance in conformance with the Dutch Building Decree. An Environmental Product Declaration (EPD type III) and MRPI sheet (containing environmentally-related product information) are available upon request via [info@mosa.com](mailto:info@mosa.com). Mosa tiles are ideally suited for use in sustainable buildings and contribute to the award of hallmarks or points from organisations such as LEED and BREEAM. For current information see [www.mosa.com](http://www.mosa.com).

### NEN-EN-ISO 14001

Since 2007, Mosa have organized their environmental management system according to the international ISO 14001 standard.

### Recycling

Mosa Ultragres unglazed porcelain tiles contain up to 45% recycled material, depending on product type.

### European Construction Products Regulation

Mosa Ultragres unglazed porcelain tiles produced according to EN 14411, type Bla, meet the requirements of the European Construction Products Regulation (CPR 305/2011). For further information, CE-markings, and Declarations of Performance see [www.mosa.com](http://www.mosa.com).

### Soil Quality Decree

Mosa Ultragres unglazed porcelain tiles are NL-BSB certified in compliance with the Dutch Soil Quality Decree (certificate number IKB1578). This means that Mosa Ultragres tiles meet or exceed all the environmental requirements of the Dutch assessment guidelines BRL 52230 and are suitable for outdoor use including façades.

### KOMO quality declaration

Mosa Ultragres unglazed porcelain tiles are KOMO certified (certificate number IKB1466) and meet more stringent requirements regarding size tolerance, flatness, and stain resistance, in accordance with Dutch assessment guideline BRL 1010.

### Walking safety

Mosa Ultragres unglazed porcelain tiles have been tested according to the accepted test methods as described in the European technical specification CEN/TS 16165. We offer different surface finishes with appropriate slip resistance values for a vast range of applications. For further information please see also our technical product sheet 'Walking safety'. For test reports please contact the Customer Service department at [info@mosa.com](mailto:info@mosa.com) or telephone number +31 (0)43 368 92 29.

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### Technical data

Properties in accordance with standard EN 14411, annex G, type Bla, and Mosa standard<sup>A</sup>.

The Mosa standards mentioned below cover the following production sizes:

- non-rectified: 10 x 10, 15 x 15, and 30 x 30 cm;

- rectified: 30 x 60, 45 x 45, 45 x 90, 60 x 60, 60 x 120, 90 x 90, and 100 x 100 cm<sup>B</sup>.

Property	Test method	Standard EN 14411 Bla	Standard Mosa
Length and width	ISO 10545-2	L < 15 cm: +/- 0.9 mm L ≥ 15 cm: +/- 0.6 %, max. +/- 2.0 mm	L = 10 cm: +/- 0.5 % L ≥ 15 cm - ≤ 30 cm: +/- 0.3 % rectified: +/- 0.3 mm
Thickness <sup>C</sup>	ISO 10545-2	L < 15 cm: +/- 0.5 mm L ≥ 15 cm: +/- 5 %, max. +/- 0.5 mm	d < 10 mm: +/- 4 % d ≥ 10 mm: +/- 3 %
Straightness of sides	ISO 10545-2	L < 15 cm: +/- 0.75 mm L ≥ 15 cm: +/- 0.5 %, max. +/- 1.5 mm	non-rectified: +/- 0.5 % rectified: +/- 0.3 mm
Rectangularity	ISO 10545-2	L < 15 cm: +/- 0.75 mm L ≥ 15 cm: +/- 0.5 %, max. +/- 2.0 mm	non-rectified: +/- 0.5 % rectified: +/- 0.5 mm
Edge curvature	ISO 10545-2	L < 15 cm: +/- 0.75 mm L ≥ 15 cm: +/- 0.5 %, max. +/- 2.0 mm	L = 10 cm: max. +/- 0.4 mm L = 15 cm: max. +/- 0.6 mm L = 30 cm: max. +/- 0.8 mm L > 30 cm - ≤ 60 cm: max. +/- 1.1 mm L > 60 cm: max. -1.2 / +1.8 mm
Centre curvature	ISO 10545-2	L < 15 cm: +/- 0.75 mm L ≥ 15 cm: +/- 0.5 %, max. +/- 2.0 mm	L = 10 cm: max. -0.4 / +0.6 mm L = 15 cm: max. +/- 0.8 mm 30 x 30 cm: max. +/- 1.2 mm 30 x 60 / 45 x 45 / 60 x 60 cm: max. +/- 1.5 mm other rectified: max. +/- 1.8 mm
Warpage	ISO 10545-2	L < 15 cm: +/- 0.75 mm L ≥ 15 cm: +/- 0.5 %, max. +/- 2.0 mm	L ≤ 15 cm: max. +/- 0.4 % 30 x 30 cm: max. +/- 0.3 % rectified: max. +/- 1.4 mm
Water absorption	ISO 10545-3	average ≤ 0.5 %; individual ≤ 0.6 %	surface: < 0.1 % body: ≤ 0.3 %
Breaking strength <sup>D</sup>	ISO 10545-4	d < 7.5 mm: ≥ 700 N d ≥ 7.5 mm: ≥ 1300 N	d < 7.5 mm: ≥ 1200 N d ≥ 7.5 mm: ≥ 1700 N
Bending strength	ISO 10545-4	average ≥ 35 N/mm <sup>2</sup> ; individual ≥ 32 N/mm <sup>2</sup>	≥ 45 N/mm <sup>2</sup>

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Property	Test method	Standard EN 14411 Bla	Standard Mosa
Impact resistance	ISO 10545-5		0.86 (restitution coefficient)
Wear resistance	ISO 10545-6	≤ 175 mm <sup>3</sup>	120 +/- 30 mm <sup>3</sup>
Coefficient of linear thermal expansion	ISO 10545-8		8 x 10 <sup>-6</sup> [K <sup>-1</sup> ]
Thermal shock resistance	ISO 10545-9	required	resistant
Frost resistance	ISO 10545-12	required	resistant
Chemical resistance against:	ISO 10545-13		
- Acids and alkalis:			
- low concentrations			class ULA
- high concentrations			class UHA
- Household chemicals and swimming pool salts		≥ class UB	class UA
Stain resistance	ISO 10545-14		≥ class 3
Bond strength:	EN 12004		
- Cementitious adhesive, type C2			≥ 1 N/mm <sup>2</sup>
UV resistance	DIN 51094		resistant
Fire reaction	CWT <sup>E</sup>		A1 <sub>FL</sub>
Cradle to Cradle Certified <sup>®</sup>			Gold

<sup>A</sup> Assuming there is no change to the surface of the tiles. A treatment applied to Mosa tiles by third parties after installation, such as a chemical or mechanical anti slip treatment, can have a negative impact on the appearance and physical properties of the tiles. Mosa does not accept any liability for this.

<sup>B</sup> Dimensionality, straightness, and curvature (ISO 10545-2) of all (specially produced) different and derivative sizes and products comply at least to the requirements stipulated in EN 14411, annex G, type Bla.

<sup>C</sup> The thickness tolerance is related to production sizes and is the average of multiple measurements on one single tile. In case of specially cut tiles from production tiles the thickness may slightly deviate. Knobbed tiles (TS, WS, and XS) are measured without knobs.

<sup>D</sup> The breaking strength requirements (ISO 10545-4) do not apply to oblong sizes.

<sup>E</sup> "Classified without testing" as per European Commission Decision 96/603/EC.

### Sizes

#### Modular sizes versus manufacturing sizes

The production is based on manufacturing sizes, in accordance with Mosa's modular system. The modular size is expressed in centimetres, while the manufacturing size is expressed in millimetres. A modular size of 15 x 15 centimetres is equivalent to a manufacturing size of 146 x 146 millimetres. The tiles are intended for installation with a 3 or 4 millimetres grout line.

Non-rectified tiles may have other manufacturing sizes (= calibres), within the tolerances of the Mosa standard.

The calibre code is shown on the tile packaging. Mosa pallets always contain tiles of a single calibre. Always use tiles of the same calibre when working on a single large surface.

### Rectified

All tiles larger than 30 x 30 centimetres have rectified edges and can be installed with a minimum grout line width of 2 millimetres.

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### Shades and design

Tiles are a natural product. Colour differences may occur. Mosa sorts products by shade which is indicated on the box. When applying plank patterns consisting of different sizes, different shades may be supplied. The surface design of Mosa Ultragres unglazed porcelain tiles is the result of a randomized scattering process; every tile is unique. Design and shade of supplied tiles may deviate from shown samples.

### Article coding on the packaging

The following information can be derived from the coding on the packaging:

Sample article coding on packaging: **216 V 060060 1 77 AA 0 X03**

<b>216</b>	colour	
<b>V</b>	surface indication	V/VV: smooth; AS/LS/MR/RL/RM/RQ/TS/WS/XS: relief tile / textured / anti slip
<b>060060</b>	nominal size 60 x 60 cm	
<b>1</b>	grade	Mosa only packages and delivers grade 1 tiles.
<b>77</b>	calibre designation	Manufacturing size 597 x 597 mm, modular with a 3 millimetres grout line.
<b>AA</b>	shade designation	
<b>0</b>	thickness designation	Standard 0. If a standard article is to be produced in a non-standard thickness, a different thickness designation will be shown here.
<b>X03</b>	packaging code	Indicates the type of box and the number of pieces per box.

### HACCP

Various series include matching, modular thin coved skirtings, and tiles with internal and external corners for rounded transitions between tiled walls and floors. The use of thin coved skirting is particularly recommended in areas subject to HACCP requirements, such as:

- bakeries
- fruit and vegetable processing areas
- hotels, restaurants, and cafés
- supermarkets
- slaughterhouses and butcher shops
- fish processing and retailing areas
- food preparation areas
- dairy production and processing areas
- breweries
- changing and shower rooms

The Global Collection and Softline series also include an extensive range of slip resistant products and special solutions for curved wall/floor transitions and corners.

### Light reflectance value

The light reflectance value (LRV) is determined according to ASTM C609-07 and the ratio of the total quantity of light reflected from a surface to the total quantity of incident light on the surface. The LRV can be used to determine the contrast between different colours. LRV may be useful when preparing a lighting plan and selecting colours for non-ventilated façades. See the Mosa Product Details book or [www.mosa.com](http://www.mosa.com) for the indicative LRV for each colour.

### Solar Reflectance Index

The Solar Reflectance Index is measured in accordance with ASTM E1980 and indicates the surface's ability to stay cool in the sun by reflecting solar radiation and emitting thermal radiation. For further information please contact the Customer Service department at [info@mosa.com](mailto:info@mosa.com) or telephone number +31 (0)43 368 92 29.

### Façade cladding

Because they are manufactured using the Ultragres procedure, in accordance with EN 14411, type BIa, unglazed Mosa porcelain tiles are frost resistant and suitable for use as façade cladding. Attachment and anchoring must be carried out in accordance with the instructions of the constructor and/or the work specifications. For detailed information about façade cladding, visit [www.mosa.com](http://www.mosa.com) or contact telephone number +31 (0)43 368 92 29.

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### Tiling recommendations

Mosa porcelain tiles can be installed with any conventional tiling method, using any mortars, adhesives (EN 12004, type C2), and grout compounds (EN 13888), suitable for fully vitrified porcelain tiles. For detailed installation recommendations see [www.mosa.com](http://www.mosa.com).

Due to the random scattering pattern during the production process, the tile surface has a directional pattern. Please keep this in mind when placing the tiles.

### Planks

Planks from the Mosa Ultragres unglazed porcelain tile collection are modular and can be used to create a continuous pattern with tiles of sizes 60 x 60, 90 x 90, and 60 x 120 centimetres. For use on walls, floors, and façades. Due to the flatness tolerances of the substrate and the planks, slight unevenness in the tiled wall cannot be ruled out when tiles are installed in a brickwork pattern. Any resulting shadows will be accentuated by raking light.

### Maintenance

See [www.mosa.com](http://www.mosa.com) for the latest maintenance recommendations.

### General questions

Customer Service: [info@mosa.com](mailto:info@mosa.com); Tel.: +31 (0)43 368 92 29.

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The text for this technical product sheet replaces all preceding versions and has been composed with the utmost care and in cooperation with the leading mortar and adhesive producers. All recommendations are based on the latest research. This technical product sheet contains information about Mosa products, properties, and applications, and should not be construed as a guarantee based on the provided recommendations. Mosa accepts no liability based on the content of this document. For information concerning warranties and liability please refer to our General Conditions of Sales, Delivery, and Payment. No rights can be derived from the contents of this technical product sheet. We take no responsibility for typographical errors. For the latest version, see [www.mosa.com](http://www.mosa.com).